

CLAIMS

1. An optical signal processor device (14) intended to be fitted to means (10) for optically transmitting an information-carrying signal (S; S₁, S₂, S₃), said device comprising means (20, 22) for suppressing backscattered signals (RS; RS₁, RS₂, RS₃) in the optical transmission means (10) and being characterized in that it comprises an optical propagation medium (16) intended to be connected in parallel with the optical transmission means (10), divertor means (18, 20) for diverting to said optical propagation medium (16) the back-propagated signals (P, RS; P, RS₁, RS₂, RS₃) in the optical transmission means (10), and discrimination means (22) for discriminating between a pump signal (P) intended to be back-propagated in the optical transmission means (10) and a Rayleigh backscattering signal, said discrimination means (22) being connected to the optical propagation medium (16) to suppress the Rayleigh backscattering signal by filtering that passes the pump signal (P) only.
2. An optical signal processor device (14) according to claim 1, characterized in that the divertor means comprise two circulators (18, 20), each disposed at one of the points of connection of the optical propagation medium (16) to the optical transmission means (10), to cause the information-carrying signal to travel in the optical transmission means (10), and to cause the back-propagated signals to travel in the optical propagation medium (16) between the two circulators.
3. An optical signal processor device (14) according to claim 1 or claim 2, characterized in that it further comprises an optical functional module (24) disposed on the optical transmission means (10) between the two circulators (18, 20).

4. An optical signal processor device (14) according to
claim 3, characterized in that the optical functional
module (24) comprises an optical add/drop multiplexer for
adding and dropping wavelengths and/or an optical switch
5 and/or a polarization mode dispersion compensator and/or
an optical regenerator.

5. An optical signal processor device (14) according to
any one of claims 1 to 4, characterized in that the
10 signal discrimination means (22) comprise a band-pass
filter centered on the wavelength of the Raman pump
signal (P) intended to be propagated in the optical
transmission means (10).

15 6. An optical signal processor device (14) according to
any one of claims 1 to 4, characterized in that the
signal discrimination means (22) comprise a Bragg grating
fiber whose reflection wavelength corresponds to the
wavelength of the Rayleigh backscattering signal derived
20 from the information-carrying signal.

7. An optical signal processor device (14) according to
any one of claims 1 to 6, intended to be fitted to means
(10) for optically transmitting a plurality of
25 information-carrying signals (S_1 , S_2 , S_3), which device is
characterized in that the signal discrimination means
comprise a plurality of Bragg gratings (22a, 22b, 22c)
disposed in series with reflection wavelengths
corresponding to respective wavelengths carrying
30 backscattered signals (RS_1 , RS_2 , RS_3) derived from the
plurality of information-carrying signals.

8. An optical signal processor device (14) according to
any one of claims 1 to 6, intended to be fitted to means
35 (10) for optically transmitting a plurality of
information-carrying signals (S_1 , S_2 , S_3) and
characterized in that the signal discrimination means

comprise an optical signal demultiplexer (26a) adapted to transmit only certain signals of predetermined wavelengths and associated with an optical signal multiplexer (26b).

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9. An optical signal processor device (14) according to any one of claims 1 to 8, characterized in that the optical transmission means (10) include a line optical fiber and the optical propagation medium (16) comprises
10 an optical fiber portion.

10. An optical signal transmission installation comprising a distributed Raman amplification system, characterized in that it further comprises an optical signal processor device (14) according to any one claims
15 1 to 9.